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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/774,937	01/31/2001	Koichiro Yamashita	1503.65173	6180

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EXAMINER	
BULLOCK JR, LEWIS ALEXANDER	
ART UNIT	**PAPER NUMBER**
2127	

DATE MAILED: 02/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/774,937	YAMASHITA, KOICHIRO	
	Examiner	Art Unit	
	Lewis A. Bullock, Jr.	2127	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *response filed 10/18/04*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,8,9,11,14 and 16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,8,9,11,14 and 16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 January 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 09/774,937, filed on January 31, 2001.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-5, 8, 9, 11, 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over WHEAT (U.S. Patent 5,630,129) in view of "Towards Flexibility and Scalability in Parallel Job Scheduling" by Barbosa da SILVA et al.

As to claim 1, WHEAT teaches a scheduling apparatus performing job (work request) scheduling of a parallel computer system (parallel computer) having a plurality of processor elements (processors) (col. 2, lines 17-33), comprising: a determining device determining whether or not to move a first job (work request / data cell) currently being executed by a processor element (high work-load processor) to a different processor element (low work-load processor); and an assigning device assigning a second job (another work request / data cell) currently being executed (by another processor) to the plurality of processor elements (low work-load processor neighborhood) so that a migration process of the first job (work request / data cell) is

performed, if it is determined that the first job is to be moved to the different processor element (col. 2, lines 17-33; col. 2, lines 45-47; col. 5, lines 51-67) and a third hierarchy with dynamic scheduling when a job is entered into a processor element (via the initial scheduling of a job with a processor as disclosed above) and a fourth hierarchy with dynamic scheduling of a job currently being executed on a processor element (via the assigning device assigning the job to a low work-load processor as disclosed above). It would be obvious to one skilled in the art at the time of the invention that since the determining, computing, and exporting tasks is performed repeatedly for the processors, then the second job is migrated from a current processor to a first set of low work-load processors and the first job is migrated to the processor that migrated the second job since it is the new low work-load processor. However, WHEAT does not teach the parallel computer system performing a first and second scheduling hierarchy.

SILVA teaches a parallel system for scheduling jobs on parallel processors wherein the system first with sequential process (front end scheduler) at the start of the system until the queue is filled with jobs (global queue) and static scheduling of a job within a queue (via the front-end scheduler scheduling jobs to be executed on servers) (pg. 2-3, "...we view the parallel machine as composed of a general queue of jobs to be scheduled and a number of servers, each server corresponds to one processor...Scheduling actions are made at two levels: In the case of a workload change, global spatial allocation decisions are made in a front end scheduler, who decides in which portion of the trace diagram the new coming job will run. The switching of local tasks in a processor is defined in the trace diagram is made through

local schedulers, independently of the front end."). Therefore, it would be obvious to one skilled in the art at the time of the invention to combine the teachings of WHEAT with the teaches of SILVA in order to facilitate flexible simultaneous scheduling of multiple parallel jobs with different characteristics (abstract).

As to claim 2, WHEAT teaches a monitoring device monitoring a load state of the plurality of processor elements (processors), wherein if a load distribution imbalance occurs between the plurality of processor elements (processors), the assigning device assigns the second job to the plurality of processor elements (col. 5, lines 60-67; col. 2, lines 17-33).

As to claim 3, WHEAT teaches the determining device generates a job information table (priority list) including information of the second job (priority of work / pointer of work), determines a job to be moved among jobs within the job information table (priority list) (col. 7, lines 62-65), and generates a relocation list (work request / buffer) including information of a job relocated on the plurality of processor elements; and the assigning device assigns the second job to the plurality of processor elements based on the relocation list (col. 6, lines 20-57; col. 2, lines 17-33)

As to claims 4 and 5, WHEAT teaches the determining device calculates a cost (processing cost) required for the migration process of the first job (work request) and determines whether or not to move the first job (work request) to the different processor

based on the calculated cost wherein the cost is the execution cost of the job (col. 6, lines 1-8; col. 6, lines 20-57).

As to claim 8, reference is made to a system that corresponds to the apparatus of claim 1 and is therefore met by the rejection of claim 1 above.

As to claim 9, reference is made to a computer readable medium that corresponds to the apparatus of claim 1 and is therefore met by the rejection of claim 1 above.

As to claim 11, refer to claim 1 above for rejection.

As to claim 14, reference is made to a propagation signal that corresponds to the apparatus of claim 1 and is therefore met by the rejection of claim 1 above.

As to claim 16, reference is made to a method that corresponds to the apparatus of claim 1 and is therefore met by the rejection of claim 1 above.

Response to Arguments

4. Applicant's arguments with respect to claims 1-5, 8, 9, 11, 14 and 16 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lewis A. Bullock, Jr. whose telephone number is (571) 272-3759. The examiner can normally be reached on Monday-Friday, 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LEWIS A. BULLOCK, JR.
PRIMARY EXAMINER

February 22, 2005